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ABSTRACT

The potential application of objectives and objective-based measures to evaluation problems of different types is discussed. A framework for categorizing educational evaluation problems and decision areas is used to support the discussion. Decision areas are: 1) selection of the appropriate problem or objective to be served; 2) selection and design of the program to be introduced which best fulfills the objective; 3) modifying the program in terms of field conditions; and 4) certifying the appropriateness of the program for introduction elsewhere. Five evaluation stages are utilized to provide information related to these decisions: 1) Needs Assessment Evaluation; 2) Program Analysis Evaluation; 3) Implementation Analysis Evaluation; 4) Process Analysis Evaluation; and 5) Outcome Analysis Evaluation. Each stage is described and the relationships between evaluation information and subsequent decisions are noted, as well as the fact that objectives and objective-based measures are of major importance in evaluation. (Author/LR)

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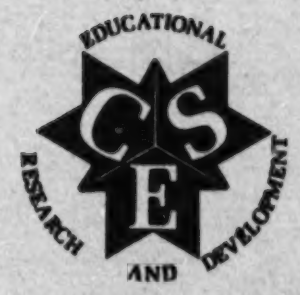

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OBJECTIVES AND OBJECTIVE-BASED MEASURES IN EVALUATION*

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The main purpose of this paper is to discuss the potential application of objectives and objective-based measures to evaluation problems of different types. To accomplish this, a framework must first be established for categorizing and then considering the range of educational evaluation problems.

At the Center for the Study of Evaluation a definition of evaluation has been adopted which focuses on the necessity for meeting the information needs of decision-makers. That is, evaluation is the process of selecting, collecting, analyzing and reporting information in a meaningful form that will enable decision-makers to select among alternatives.

This general view of evaluation has forced the Center to view the total instructional improvement process in order to identify the normal sequence of educational decisions that might occur. The identification of the educational decision sequence (or of <u>one possible</u> educational decision sequence) provides insight concerning the kinds of judgments that decision-makers must make and the concomitant information needs of these decision-makers.

In Chart I, which follows, four major decision areas are identified and the five kinds of evaluation which provide information for decisions in these areas.[1] The decision areas deal with: (1) selection of the appropriate problem or objective to be served; (2) selection and design of the program to be introduced which best fulfills the objective; (3) modifying the program in terms of field conditions; and (4) certifying the appropriateness

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[1] While the listing in Chart 1 seems to imply a linearity between evaluation and decisions and between decision stages, CSE would not be so naive as to believe that such a relationship always pertains. The evaluation-decision model has been simplified for discussion purposes here.

Chart 1

Decision Areas and Evaluation Requirements

Evaluation	Decision Area
Needs Assessment (E_1)	Problem Selection (D_1)
Program Analysis (E_2)	Program Selection (D_2)
Implementation Analysis ($E_{3.1}$) (Intervention) Process Analysis ($E_{3.2}$) (Intervention)	Program Modification (D_3)
Outcome Analysis (E_4) (Non-Intervention)	Program Certification (D_4)

of the program for introduction elsewhere. The five evaluations listed are intended to provide information related to these decisions. In the succeeding paragraphs each of these areas will be examined in turn.

Needs Assessment Evaluation (E_1)

The decision-maker may be forced to make choices related to school or program priorities. This is generally a reasonable assumption. Given the scarcity of resources within his current situation, a decision-maker might want to make a decision about the problem area most in need of attention. This problem selection decision is based in large part on a needs assessment evaluation. Needs assessment attempts to examine the gap between goals and the existing state of affairs. The evaluative problem is essentially one of assessing the needs of students, of the community, and of society in relation to the current status or accomplishments of the system.

Needs assessment is objective-oriented in that the assessment must result in a statement of desired educational objectives that are compared with actual educational attainments related to the same objective dimensions.

Having been provided with this information, the decision-maker concerned with the instructional improvement process is able to select from among the alternatives those problem areas (objective dimensions) which need attention or modification. Further exemplification of the use of objectives and objective-based measures in needs assessment evaluation is to be found in CSE Reprint Series, Reprint No. 10, "Experimental Assessment of the Effects of the PROBE System," by Eva Baker.

Program Analysis Evaluation (E_2)

A second decision area of concern deals with program selection. The decision-maker, having made a decision about the specific problem area (or

objective) in which his system is deficient, must choose between the existing program which is directed towards the achievement of that objective and various alternative programs that might be introduced. These choices are referred to as program selection decisions. These decisions are in large part based upon information provided in a program analysis evaluation. In this evaluation stage, the evaluator is generally asked to provide information on the possible impact of the introduction of several alternative programs. The evaluator's task is to provide, prior to a program's inception, information concerning the potential success of that program. Thus, while it may appear that the evaluator's job is merely speculative, he must attempt, at the very least, to develop procedures for systematizing speculation. Review procedures for examining the quality of the program materials might be developed. Alternatively, simulations and games might be utilized to examine in microcosm the potential impact of the various alternatives.

A program analysis evaluation is objective-oriented in that the alternative programs, including those which are developed during the evaluation, are being analyzed relative to their potential accomplishment of the desired objective(s). Moreover, potential attainment of other objectives (desired or undesired) is also a basis for consideration of programs.

When such information has been provided, the decision-maker must make a judgment as to which program offers the greatest probability of success within his system. The decision is not completely dictated by the data provided by the evaluator. Even though the evaluator should attempt, within his study, to be as cognizant as possible of the political and contextual variables which bound or restrict the nature of the ultimate

decision, it is not likely that he can become aware of them all. Thus, the program actually selected may differ somewhat from the one which looks best "on paper."

Implementation Analysis ($E_{3.1}$) and Process Analysis ($E_{3.2}$) Evaluations

Having made the decision to introduce a specific program, the decision-maker must be in a position to make program modifications, as the situation demands, throughout the course of the introduction of that program. These program modification decisions require evaluation information of various types. First, there is a need for information concerning the extent to which the program has been implemented in the manner prescribed during program selection and to the group for whom it was intended. This information is referred to as implementation analysis evaluation. Secondly, the decision-maker must have information on the impact of the program on the educational process. This process analysis evaluation is intended to provide information to the decision-maker on the progress being achieved towards fulfilling the intended objective(s) as well as information on any unanticipated outcomes which might have been observed.

In an implementation analysis evaluation the concern is with providing information on the manner in which the program has been implemented. One relevant question is the degree to which that program, as described in the program selection decision, has been introduced. That is, has the program been introduced and is it operating in the pedagogical manner in which it was intended to be used? Furthermore, the program selection decision was based on various assumptions about the nature of the student population to be served. If these assumptions were incorrect or are no longer appropriate, then this information, as a part of an

implementation analysis evaluation, should be meaningful to the decision-maker in determining whether it is appropriate to allow the program to continue. Thus, the nature of the student population is another source of data in an implementation analysis evaluation. From the above, it is apparent that implementation evaluation is not directly objectives-related, in that the evaluator does not consider the extent to which the objectives have been achieved in this evaluation stage.

In a process analysis evaluation, the evaluator has been called upon to provide data on how the program is functioning. In terms of the short range objectives of the system, such as the intended objectives to be achieved at the end of a specific unit of study, what has been the performance of the student group? Are there noticeable unanticipated outcomes, not a part of the original objective for the program but which, nevertheless, ought to be noted as important information potentially valuable to a decision-maker in making decisions about the program?

A process analysis evaluation is objectives-oriented. The main data items obtained by the evaluator are the progress towards the achievement of the objective(s) and unanticipated outcomes.

The decisions related to implementation analysis evaluation and process analysis evaluation are likely to be program modifications during the course of the program rather than decisions at the conclusion of the program. The evaluative functions identified in the two types of evaluation leading to program modification decisions are designed to be interventionist in nature. That is, during these stages the evaluator is envisaged as one who is concerned with providing information regarding the modification and improvement of programs during the process of their

introduction. This is directly opposed to the more passive role that might be associated with a research-observer who, through his desire to draw valid generalizable conclusions, is careful not to intercede in the process.

Outcome Analysis Evaluation (E_4)

At some point, after a program has been introduced into the system and has been properly implemented and modified in line with whatever difficulties have been noted, one may wish to consider the potential generalizability of the program. A decision related to the potential generalizability of a program to other educational systems is viewed as a program certification decision. The evaluation associated with such decisions is referred to as outcome analysis evaluations.

In outcome analysis evaluations the role of the evaluator is modified from the interventionist stance previously described. In order to maintain the generalizability of the situation, it is imperative that the evaluator not be actively involved in the program, and that he attempt to ensure that drastic program modifications are not being made concurrently with the evaluation. Most protocols of experimental research would be applicable to such situations. It is the view of the Center that the changing nature of educational systems as well as the exigencies of real world problems would make it extremely difficult to complete a pure outcome analysis evaluation.

Summary

In the preceding pages, a framework has been presented which depicts an evaluation-decision sequence. Each of the evaluation stages has been described, and the relationships between evaluation information and

subsequent decisions have been noted. In Chart 2, the evaluation information appropriate to each stage has been summarized. All stages, with the exception of implementation, utilize objectives or objective-based measures as a prominent part of the evaluation information. In process analysis and outcome analysis evaluation, achievement of the objectives (use of objective-based measures) is the major source of evaluation information. In program analysis evaluation, data related to the likelihood of achieving the objectives are the major sources of information. Finally, in needs assessment evaluation the objectives themselves and the objective measures are the sources of data.

It is apparent that objectives and objective-based measures are of major importance in evaluation. Recognition of the different kinds of decisions that evaluation serves and the information requirements of each will help in understanding the potential areas of use of objectives and objective-based measures in evaluation.

Chart 2

Use of Objectives in Various Evaluation Stages

Evaluation Stage	Evaluation Information
Needs Assessment (E_1)	Objectives, relative to outcomes, within constraints of system characteristics
Program Analysis (E_2)	Programs, relative to likelihood of their achieving an objective(s)
Implementation Analysis ($E_{3.1}$) (Intervention)	Implementation of Program: Personnel, Physical, Pedagogical
Process Analysis ($E_{3.2}$) (Intervention)	Progress toward the achievement of objective(s) Unanticipated outcomes
Outcome Analysis (E_4) (Non-Intervention)	Achievement of objective(s) Unanticipated outcomes

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